

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

NO 8601682
MAR 1985

INTELLECTUAL PROPERTY ORGANIZATION
International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification⁴ :

A01M 23/00, 23/02

A1

(11) International Publication Number:

WO 86/ 01682

(43) International Publication Date:

27 March 1986 (27.03.86)

(21) International Application Number: PCT/AU85/00226

(22) International Filing Date: 13 September 1985 (13.09.85)

(31) Priority Application Number: PG 7101/84

(32) Priority Date: 13 September 1984 (13.09.84)

(33) Priority Country: AU

(71)(72) Applicant and Inventor: DRINKWATER, John, Alfred [AU/AU]; 12 Wave Street, Hampton, VIC 3188 (AU).

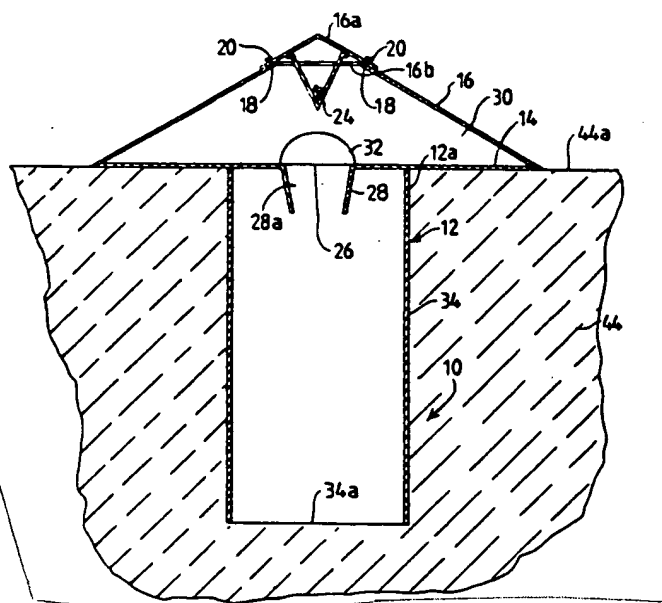
(74) Agents: LESLIE, Keith et al.; Davies & Collison, 1 Little Collins Street, Melbourne, VIC 3000 (AU).

(81) Designated States: AT (European patent), AU, BE (European patent), CH (European patent), DE (European patent), FR (European patent), GB (European patent), IT (European patent), LU (European patent), NL (European patent), SE (European patent), US.

Published

With international search report.

(54) Title: TRAP



(57) Abstract

Trap for animals such as mice, having a tubular portion (12) insertable into an auger-formed hole in the ground (44). The tubular portion (12) is surmounted by an enclosure (30) defined by a roof (16) and a floor plate (14) which rests on the ground surface (44a). The plate (14) has an opening (26). Animals attracted to the trap by bait in a bait carrier (24) in enclosure (30) enter the enclosure (30) via an opening (32) and fall into tubular portion (12) via opening (26).

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	GA	Gabon	MR	Mauritania
AU	Australia	GB	United Kingdom	MW	Malawi
BB	Barbados	HU	Hungary	NL	Netherlands
BE	Belgium	IT	Italy	NO	Norway
BG	Bulgaria	JP	Japan	RO	Romania
BR	Brazil	KP	Democratic People's Republic of Korea	SD	Sudan
CF	Central African Republic	KR	Republic of Korea	SE	Sweden
CG	Congo	LI	Liechtenstein	SN	Senegal
CH	Switzerland	LK	Sri Lanka	SU	Soviet Union
CM	Cameroon	LU	Luxembourg	TD	Chad
DE	Germany, Federal Republic of	MC	Monaco	TG	Togo
DK	Denmark	MG	Madagascar	US	United States of America
FI	Finland	ML	Mali		
FR	France				

-1-

TRAP

This invention relates to traps, such as for mice.

5 In one aspect the invention provides a trap comprising a portion, adapted to be positioned neatly in upright position in a complementary hole in the ground, with one end of the tubular portion adjacent the ground surface, and means for permitting entry of an animal to the so positioned tubular portion adjacent said one end. Said portion is preferably tubular said means may comprise an entryway having an opening for the animal.

10 If said portion is of sufficient length and has a relatively smooth interior surface, the animal will be unable to exit from the portion once having entered it. To facilitate this action, the entryway may define a further opening to the said portion adjacent said one

15 end, said further opening having a tubular wall extending from the said one end around the further opening and within the tubular portion. However, if desired, means such as a spring loaded trap door may be provided for preventing exit. The said one end may have means for

20 holding a bait therein and may have an enclosed cover extending over the entryway and within which the bait is in use positioned.

The invention is further described by way of example only with reference to the accompanying drawings

25 in which:

-2-

Figures 1 and 2 are opposite end perspective views of a trap constructed in accordance with the invention;

Figure 3 is an axial cross-section of the trap of
5 Figures 1 and 2, positioned for use;

Figure 4 is an enlarged fragmentary cross-section of an upper part of a roof of the trap;

Figure 5 is a perspective view of a modified form of trap constructed in accordance with the invention;

10 Figure 6 is a side view of the trap of the Figure 5;

Figure 7 is a plan view of the trap of Figure 5;

Figure 8 is an underside view of the trap of Figure 5;

15 Figure 9 is a transverse section of the trap of Figure 5;

Figure 10 is a fragmentary cross-sectional diagram illustrating the manner of operation of the trap of Figure 5;

20 Figure 11 is a perspective view of an apertured plate useful with the trap of Figure 5; and

Figure 12 is a cross-section on the line 12-12 in Figure 11.

The trap 10 shown in Figures 1 to 4 comprises a
25 cylindrical tubular portion 12, in this case of circular cross section. At one end 12a, the portion 12 is substantially closed by a circular floor plate 14 of rather greater diameter than the portion 12, so as to present an outwardly extending flange therearound. A
30 frustoconical roof 16 is secured at its larger diameter end to the periphery of the plate 14 with its smaller diameter end being positioned above the floor plate 14 and so as to present an upper circular opening 16b. This opening 16b is closed by a conical plate 16a
35 removably positionable on the roof 16 by means of studs

-3-

18 which extend from the roof 16 through openings in the plate 16, and by means of wing nuts 20 threadedly received on the studs 18. The plate 16a carries on the underside a downwardly depending carrier 24 capable of receiving a bait for the animal to be trapped. This bait is positioned axially relative to the portion 12.

The plate 14 has an opening 26 therein coaxially arranged with portion 12, and a tubular frustoconical wall 28 is positioned therearound on the side of the plate 14 within the tubular portion 12. This wall 28 is, as shown, of somewhat convergent configuration decreasing in diameter away from the plate 14 into the interior of the portion 12. The plate 14 and roof 16 together define a conical enclosure 30 positioned at one end of portion 12 and communicating with the interior of the portion 12 via the opening 26 and a convergent tunnel 28a defined within wall 28.

Enclosure 30 is open to the exterior of the trap 10 by means of a side opening 32 in roof 16.

In order to use the trap 10, a cylindrical hole 34 is formed in the ground 44 at a suitable location. The height of the hole is equal to the length of portion 12 and the diameter of the hole is selected to be substantially the same as the diameter of the portion 12. The trap 10 is then positioned in the hole 34 with the tubular portion 12 neatly accommodated therewithin and coaxially arranged relative thereto with the plate 14 being positioned on the ground surface 44a. In this configuration, the end of the portion 12 remote from plate 14 is closed by the ground surface at the base of the hole 34, designated by reference numeral 34a.

With a suitable bait positioned in the carrier 24, and thus above opening 26, animals walking on the ground surface 44a may enter the enclosure 30 via the opening

-4-

32, being attracted by the bait. However, in attempting to reach the bait the animal is obliged to move over the opening 26 and so falls therethrough, through the tunnel 28a and into the interior of the portion 12, to be trapped therewithin. To facilitate such trapping, the interior surface of the portion 12 may be made as smooth as possible, but in any event, the configuration of the wall 28 is such as to make it difficult for animals to escape via the opening 26.

If desired, the base of tubular portion 12, remote from plate 14 may be closed off by a suitable end plate, but it has been found unnecessary to do this, even in the case where the animals to be trapped are capable of burrowing, provided the tubular portion 12 is of sufficient length.

Bait can be easily changed in the carrier 24 simply by removing the carrier through the opening 16b in roof 16, after removing the wing nuts 20 to enable withdrawal of the plate 16a and carrier 24. The trap 10 has the advantage that it can easily be positioned where desired simply by making a suitable hole with, say, an auger. To protect particular ground areas or structures, a ring of such holes may be made around the area or structure and traps 10 positioned therewithin. The traps may be readily repositioned by extraction from the holes and positioning in freshly formed holes. The open lower end of portion 12 permits animals trapped therein to be released into the ground hole on removal of the tubular portion 12 therefrom. The animals so released can then be quickly and conveniently destroyed by filling the hole.

The trap 100 shown in Figure 5 to 10 is generally similar to the upper part of the trap 10. Trap 100 has a frustoconical roof 116 with an upper circular opening

-5-

116b which receives an apertured hollow cylindrical bait carrier 124. Carrier 124 has an outwardly extending upper flange 124a which rests on the periphery of the roof 116 around the opening 116b. The upper end of the carrier
5 124 is closed by a closure plate 116a which is removably held in position by means of a bar 115 which is position-able, as shown in Figure 9 for example, so that opposite ends thereof are positioned, under some resilient deformation thereof, under projecting lugs 117 which are
10 secured to the outer surface of roof 116.

A hollow central column 125, of diameter about half of the diameter of roof 116 at its greatest diameter, extends downwardly from the underside of the roof 116, coaxially with the roof so as to surround carrier 124
15 and to extend in spaced relationship relative to the carrier.

Carrier 124 so projects downwardly from the roof 116 as to neatly pass through a central circular opening in a circular ceiling member 127 which is secured at its
20 periphery to the periphery of the roof 116, at the greater diameter end of the roof. Column 125 also extends downwardly through ceiling member 127 and neatly through a central circular opening in a circular floor member 129 positioned in spaced relationship below the ceiling member
25 127. Member 129 is secured to ceiling member 127 by two diametrically opposed radial vertically extending wall members 130 which extend from locations at the peripheries of the members 127, 129 inwardly to locations just short of the exterior surface of the column 125, and by, shorter,
30 wall members 147 which, extend only a short distance inwardly from the periphery of roof 116. Wall members 147 are angularly spaced by 90° relative to wall members 130.

The column 125 projects below floor 129 to a certain extent. The column is open at its lower end
35 but has two half circular hinged plates 131, 133 which, in rest positions thereof, form a circular sub-floor which sub-floor closes off the lower end of the column

-6-

125. The plates 131,133 are hinged about closely adjacent hinge pins 137,139 respectively which extend diametrically of the circular lower opening 125a defined at the lower end of column 125. Although, as shown in Figure 10, the plates 131,133 are capable of assuming a position where they downwardly depend from the hinges 137,139 in order to leave the lower opening 125a of the column 125 clear, they are normally biased to a horizontal co-plannar postion at which they close off the lower opening of the column 125, by means of counter weights 141,143.

The floor member 129 of the trap 100 has a downwardly depending tubular member 151 secured thereto. This is of rather larger diameter than the column 125 and is arranged coaxially therewith so as to extend downwardly from the floor member 129 to a level rather lower than the level of the plates 131,135. The lower extremity of the member 151 is inwardly tapered as indicated at 151a so as to be insertable into a cylindrical tube (not shown) which may be for example, be of the form of the tubular portion 12 of the trap 10.

The column 125 is provided, at spaced locations therearound one to either side of each of the two wall members 130, with openings 157 therethrough.

In use of the trap 100, the trap is inserted into a pre-formed cylindrical hole in the ground, either by direct insertion of the member 151 thereinto or by the fitting of the previously mentioned downwardly extending cylindrical tube to the member 151 and positioning both that tube and member 151 in the so formed hole. The floor member 129 may rest directly on the ground surface or the floor member 129 may rest upon the flat plate member 163 shown in Figures 11 and 12. This is of generally rectangular form having a circular opening 165

-7-

with a downwardly depending peripheral flange 167 therearound so that the tubular member 151 may be neatly accommodated within the opening 165 so as to extend therebelow and with the floor member 129 resting on the plate 163. In this case, the plate member 163 would be positioned on the ground surface prior to positioning of the trap 100 thereof. In any event, as before, the carrier 124 is filled with a suitable bait for attracting animals such as mice. The animals, so attracted, pass along the floor member 129 to the openings 157. Then, the animals pass through the opening 157 and, attempting to reach the bait in carrier 124, (which carrier is as shown in Figure 9 spaced from the side wall of the column 125), fall on to the plate 131 or plate 133. The counter weights 141,143 are selected to be of such weight that when an animal so falls on to a plate 131 or 133 the plate is pivoted so that the animal falls through the lower end opening 125a of the column 125 into the ground hole therebelow. Thereafter the plate 131, 133 which is so moved is reverted to its rest position under bias of its counterweight so preventing the animal from leaving via the lower end opening 125a of the column 125. The pivoting action of the plates 131,133 is shown in Figure 10 where the plate 131 is shown pivoted to an almost fully downwardly depending position and plate 133 is shown pivoted to an intermediate position. The rest positions of the plates 131, 133 are shown in Figure 10 by reference numerals 131' and 133' respectively. The corresponding positions of the counter weights 141,143 are shown by reference numerals 141' and 143'.

As shown in Figure 9, the hollow cylindrical carrier 124 may extend downwardly to a location almost adjacent the plates 131,133 when in their rest positions

-8-

and, although shown as open end at its lower end, it may be closed at its lower end. The carrier 124 may be readily removed for replenishment by removing bar 115, and plate 116a after which the carrier 124 may be removed via opening 116b.

The arrangement shown in Figures 5 to 10 has been found particularly advantageous in that the openings 157 are positioned well inboard of the outer periphery of the trap, the ceiling member 127 forming surrounding a verandah around the column 125. It has been found that this facilitates attraction of animals such as mice.

The described construction has been advanced merely by way of example only and many modifications may be made thereto without departing from the spirit and scope of the invention as defined in the appended claims.

-9-

CLAIMS

1. A trap comprising a portion, adapted to be positioned neatly in upright position in a complementary hole in the ground, with one end of the portion adjacent the ground surface, and means for permitting entry of an animal to the so positioned portion adjacent said one end.
2. A trap as claimed in claim 1 wherein said means comprises an entryway having an entry opening for the animal.
3. A trap as claimed in claim 1 or claim 2 wherein said portion is tubular.
4. A trap as claimed in claim 2 or claim 3, wherein said tubular portion is of substantial length.
5. A trap as claimed claim 2, claim 3 or claim 4 wherein the entryway defines a further opening to the said portion adjacent said one end, said further opening having a tubular wall extending from the said one end around the further opening and within the tubular portion.
6. A trap as claimed in claim 2, claim 3 or claim 4 wherein said entryway defines a further opening to said portion, adjacent said one end, which further opening is closed by a movable floor portion, said floor portion being moved under weight of an animal thereon to allow the animal to pass through said further opening, means being provided biasing said floor portion to return to a

-10-

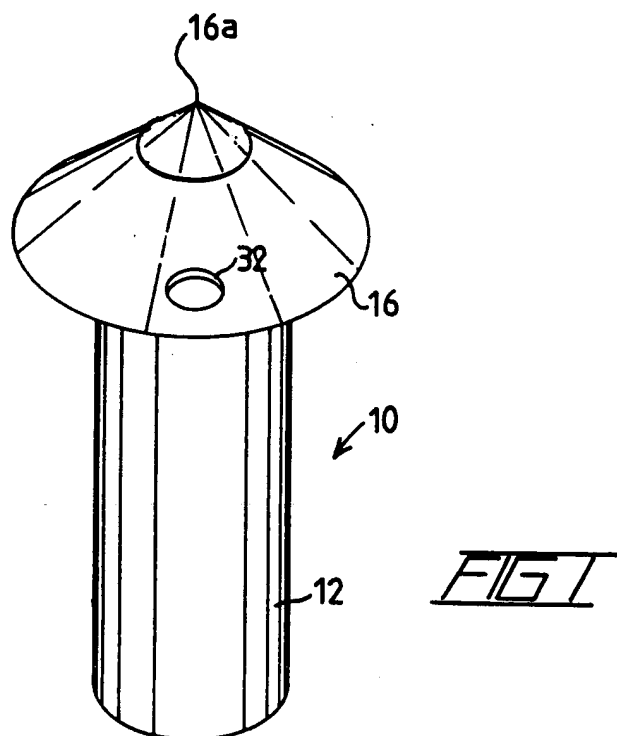
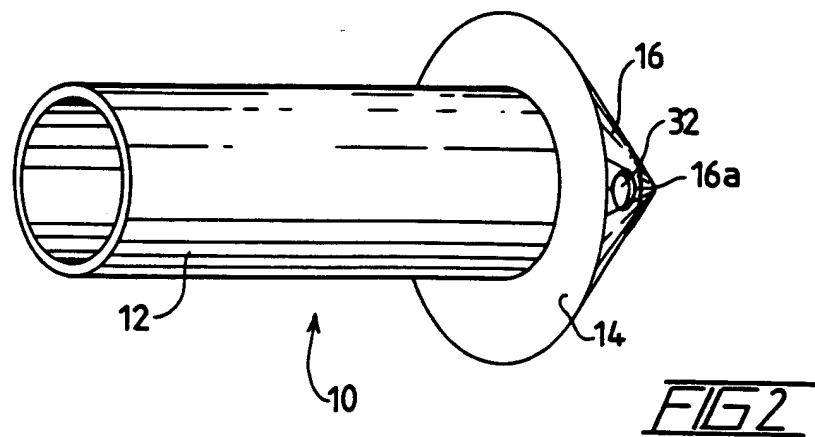
position closing said further opening after said animal has passed through the further opening.

7. A trap as claimed any one of claims 2 to 6, including in said entryway means for holding a bait to attract animals into the entryway.

8. A trap as claimed in any one of claims 2 to 7 wherein said entryway has a side opening for entrance of said animals and has , positioned outwardly of the opening, opposed floor and ceiling members.

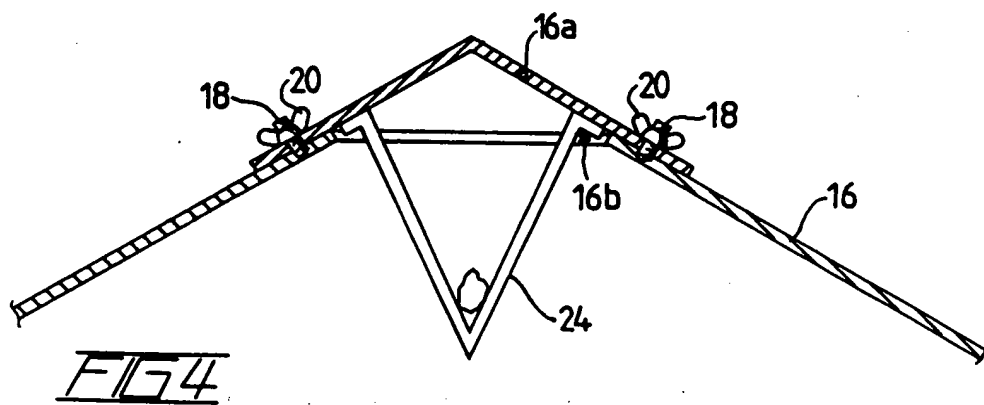
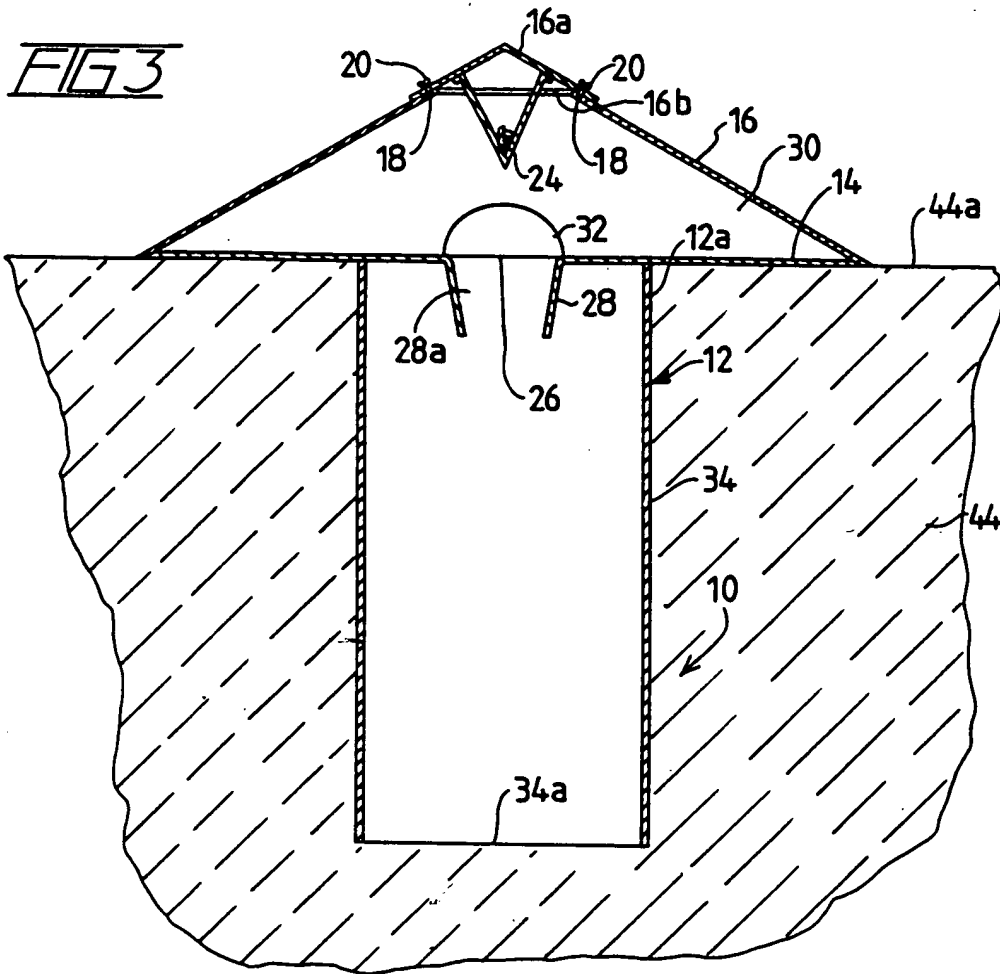
9. A trap as claimed any one of claims 2 to 8 wherein said entryway has a frustoconical roof and said entry opening is defined in a coaxially arranged column depending downwardly from the roof and of substantially less diameter than the roof at its greater diameter end.

1/9



This Page Blank (uspto)

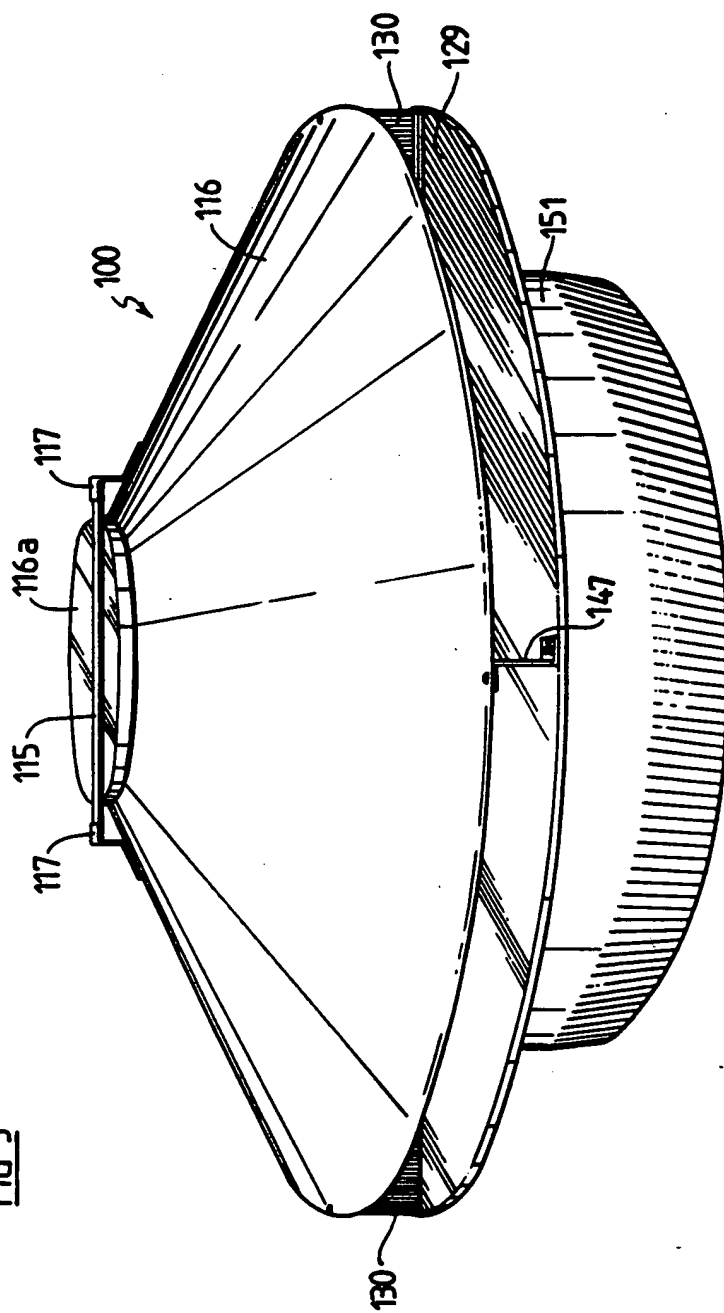
2 / 9



This Page Blank (uspto)

3 / 9

FIG 5



This Page Blank (uspto)

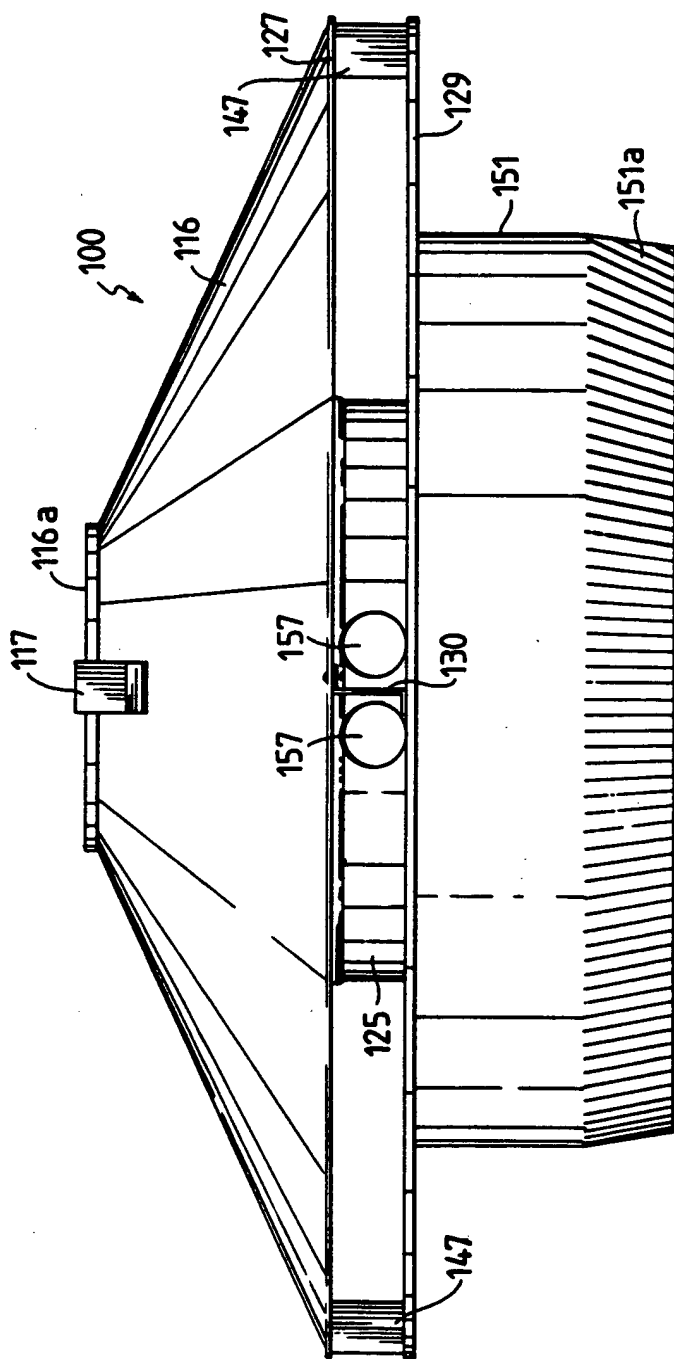
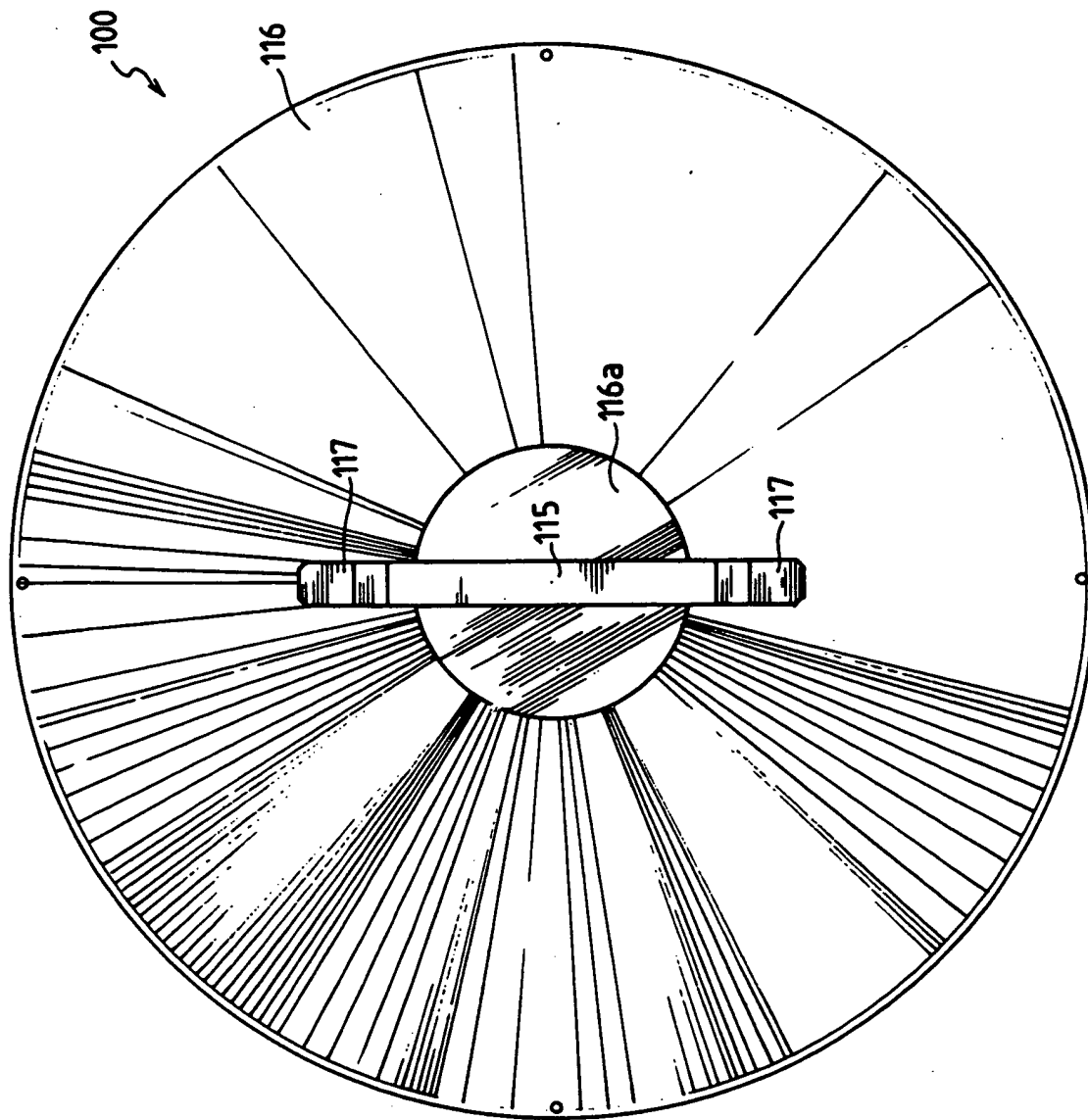


FIG. 6

This Page Blank (uspto)

**FIG 7**

This Page Blank (uspto)

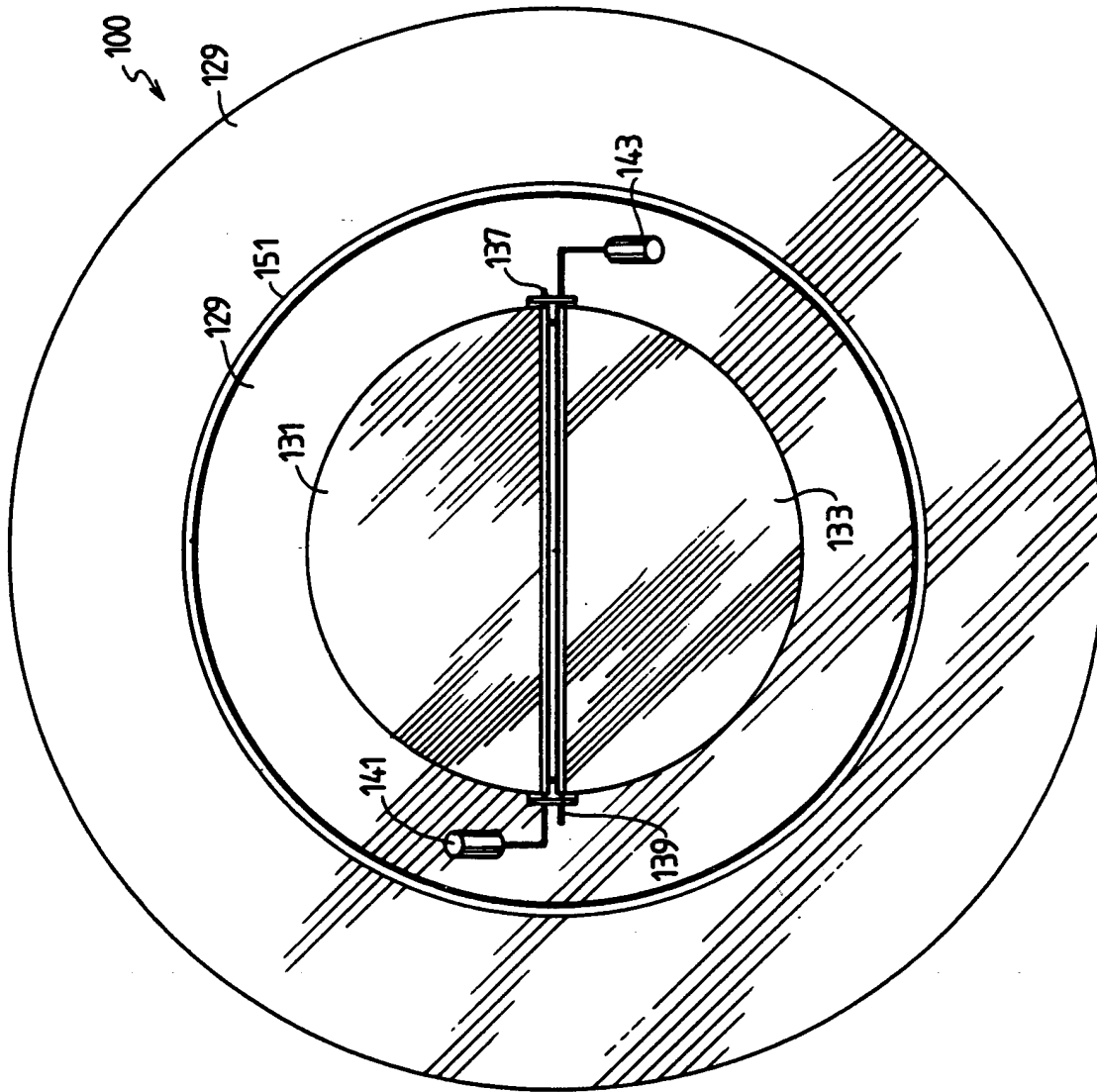


FIG 8

This Page Blank (uspto)

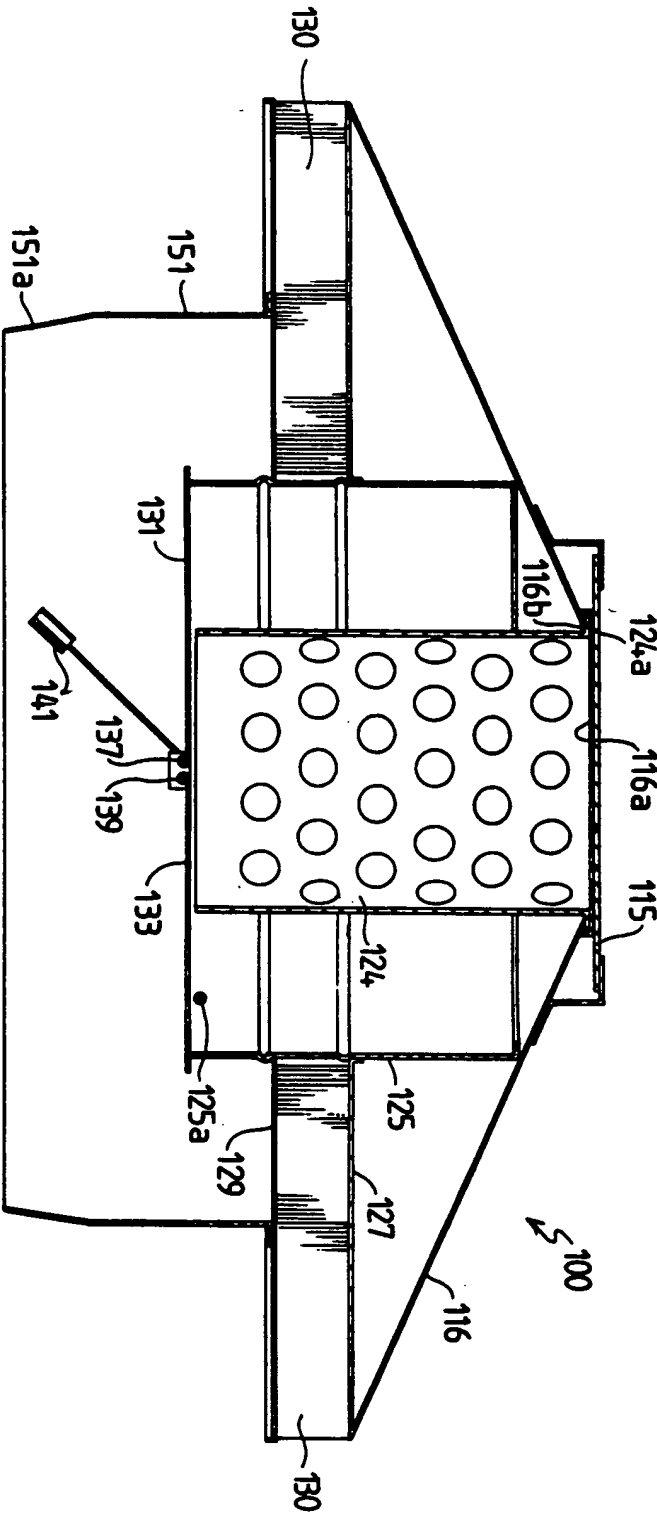


FIG 9

This Page Blank (uspto)

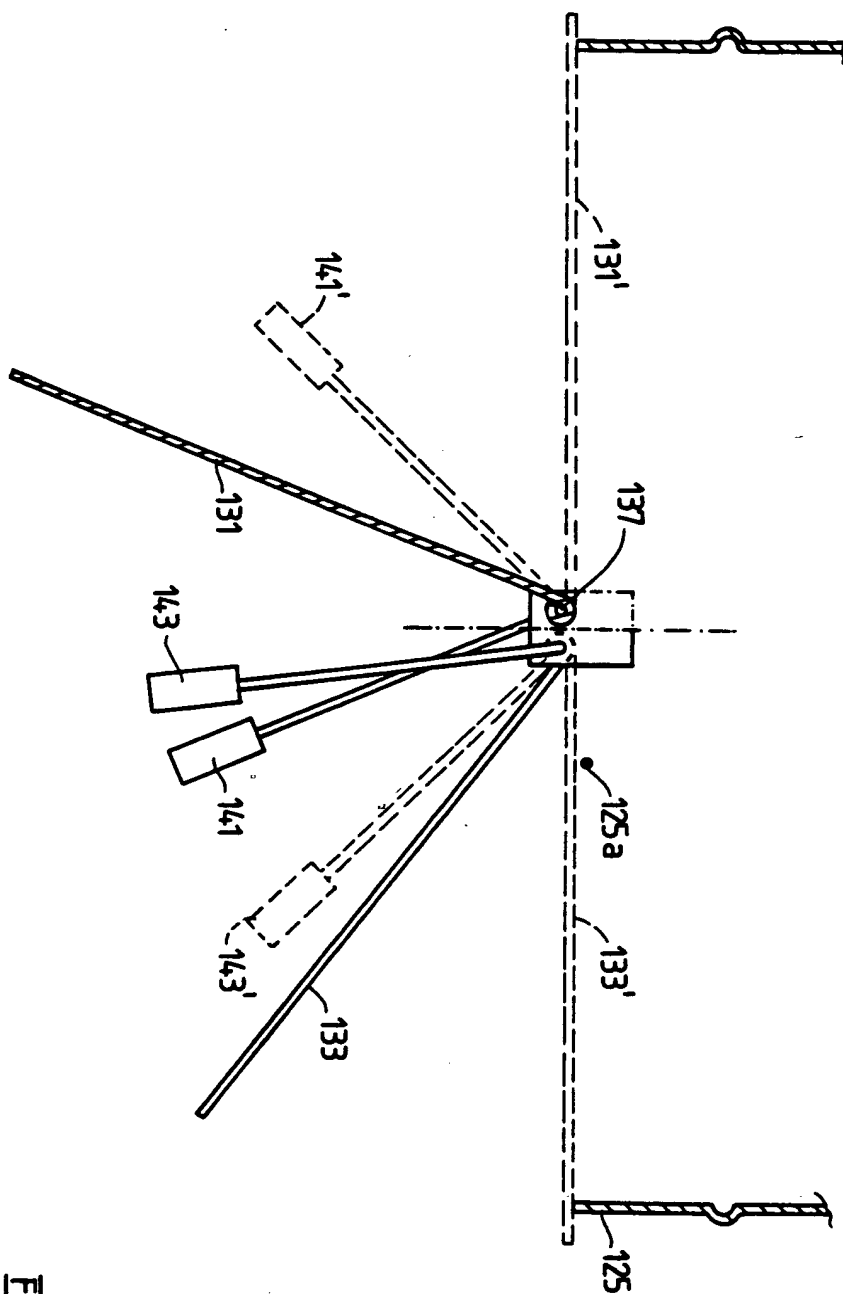


FIG 10

This Page Blank (uspto)

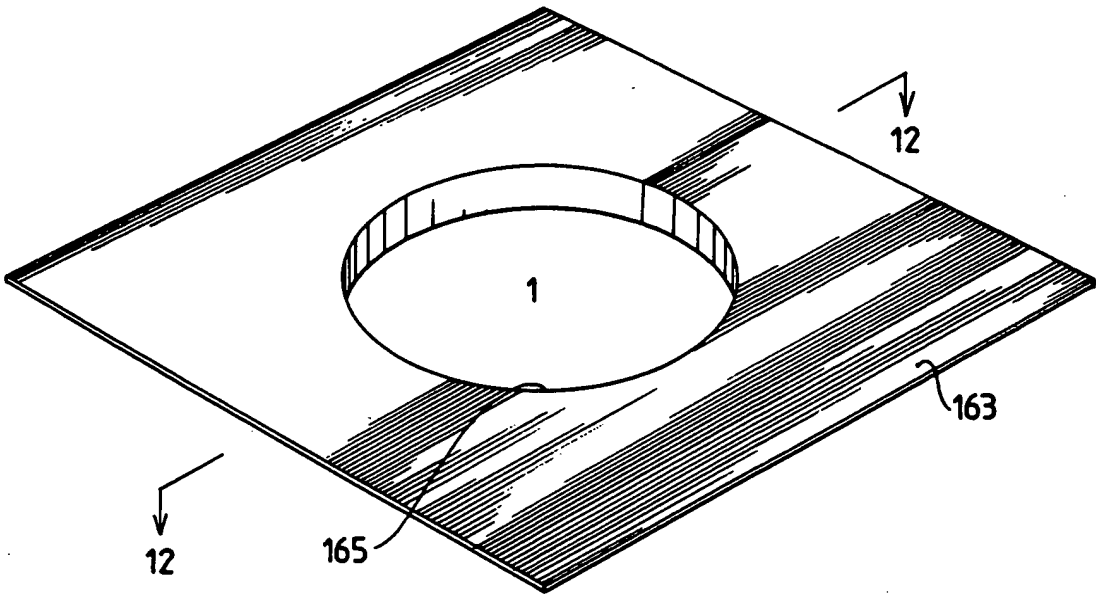


FIG 11

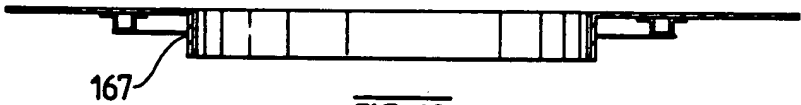


FIG 12

This Page Blank (uspto)

INTERNATIONAL SEARCH REPORT

International Application No **PCT/AU 85/00226**

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply indicate all) *		
According to International Patent Classification (IPC) or to both National Classification and IPC Int. Cl. ⁴ A01M 23/00, 23/02		
II. FIELDS SEARCHED		
Minimum Documentation Searched *		
Classification System	Classification Symbols	
IPC	A01M 23/00, 23/02	
Documentation Searched other than Minimum Documentation to the extent that such Documents are included in the Fields Searched *		
AU : IPC as above		
III. DOCUMENTS CONSIDERED TO BE RELEVANT *		
Category *	Citation of Document, ** with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
X	GB,A, 162998 (LIDDLE) 12 May 1921 (12.05/21)	1-7
X	US,A, 4372074 (ARRABIT) 8 February 1983 (08.02.83)	1-8
X	CH,A, 120191 (GIGANDET) 2 May 1927 (02.05.27) See Fig. 2	1-4
X	DE,A, 3022615 (DELLORI) 18 March 1982 (18.03.82)	1-4
X	DE,A, 2806074 (KRIEGER) 16 August 1979 (16.08.79)	1-5
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>* Special categories of cited documents: ¹⁰</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"A" document member of the same patent family</p> </div> </div>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
18 December 1985 (18.12.85)	30 DECEMBER 1985 (30.12.85)	
International Searching Authority	Signature of Authorized Officer	
Australian Patent Office	L. DAVIES	

This Page Blank (uspto)